UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/846,200	05/02/2001	Gregory Ciurpita	2925-0492P	4515

			EXAMINER
30594	7590	06/09/2004	WOZNIAK, JAMES S

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ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

		Application No.	Applicant(s)
Office Action Summary		09/846,200	CIURPITA ET AL.
		Examiner	Art Unit
		James S. Wozniak	2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>28 April 2004</u>.

2a) ☒ This action is **FINAL.**   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-27</u> is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-27</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>02 May 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

Detailed Action

Response to Amendment

1.   In response to the office action from 4/5/04, the applicant has submitted an amendment,

filed 4/28/04, amending the specification and Claims without adding new matter, while arguing

to traverse the art rejection based on the limitation regarding "detecting a natural pause between

input subgroups *(Amendment, Page 10)*.

Applicant's arguments have been fully considered, however the previous rejection is

maintained due to the reasons listed below in the response to arguments.

2.   Based on the amendments to the specification and claims, the examiner has withdrawn

the previous objections directed towards minor informalities.

Response to Arguments

3.   Applicant's arguments have been fully considered but they are not persuasive for the

following reasons:

- With respect to **Claims 1 and 13**, the applicant argues that Power et al *(U.S.*

    Patent: 5,848,388) does not teach "detecting a natural pause between input

    subgroups" and further argues that "subgroups of speech units are not individual

    words (Amendment, Page 10), however, as is currently claimed in Claims 1 and

13, pauses are detected between "subgroup[s] of speech units that form part of a complete speech sequence" *(Amendment, Page 4, Claim 1, and Page 6, Claim 13)*. As cited by Power, the claimed "complete speech sequence" is interpreted as being a phrase *(Power, Col. 4, Lines 26-27)*, while the speech unit subgroups that from the phrase correspond to words (Col. 4, Lines 64-66). Thus, since Power teaches a pause detector that detects pauses following words, a word is a subgroup of a collection of words that comprise a complete phrase input, and no detection of an inter-word pause has been specifically claimed, Power sufficiently teaches the limitation regarding "detecting a natural pause between input subgroups". Also, since Power recites the pause detector as noted above and Zavoli et al *(U.S. Patent: 6,598,016)* discloses the ability to detect and display individual speech units (Zavoli, Col. 6, Lines 54-57), Zavoli in view of Power sufficiently teaches the limitation of Claim 13 regarding "a detector for detecting a natural pause *after receiving the subgroup*".

- In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies *(i.e., "subgroups of speech are not individual words," Amendment, Page 10, suggesting that a subgroup is a portion of a word and the pauses that the present invention detects are inter-word pauses)* are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

- Since Power teaches "detecting a natural pause between input subgroups," as
  noted above, the rejection with regards to dependent **Claims 2-8, 10-12, 14-23,
  and 25-27** is maintained.

- With respect to **Claims 9 and 24**, the applicant argues that Larsen *("Investigating
  a Mixed-Initiative Dialogue Management Strategy," 1997)* does not disclose "the
  ability to enter speech units using a dial pad upon repeated recognition errors,"
  however provides no arguments as to why Larsen does not teach this limitation.
  Therefore, since Power teaches "detecting a natural pause between input
  subgroups," as noted above, the rejection with regards to dependent Claims 9 and
  24 is maintained.

Therefore, the below rejection is maintained:

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

5.   **Claims 1-8, 10-23, and 25-27** are rejected under 35 U.S.C. 103(a) as being unpatentable

over Zavoli et al *(U.S. Patent: 6,598,016)* in view of Power et al *(U.S. Patent: 5,848,388)*.

With respect to **Claims 1 and 13**, Zavoli discloses:

A method and system for recognizing speech in systems that accept speech input, comprising:

Receiving at least a current subgroup of speech units that form part of a complete speech sequence that is to be input from a user *(receiving part of a complete spoken digit string from a microphone, Col. 6, Lines 52-57)*;

Recognizing the speech units of the subgroup to provide a recognition result *(displaying individual digits within a string to a user for correction/verification, Col. 6, Lines 54-57, upon recognition from a voice recognition module, Col. 5, Lines 24-28)*; and

Immediately feeding back the recognition result for verification by the user *(displaying individual digits to a user, upon recognition, for correction/verification, Col. 6, Lines 54-57)*.

Zavoli does not teach the ability to detect pauses in speech, however, Power discloses:

Detecting a natural pause between input subgroups *(pause detector used to detect a pause following a word and further enable a parser to output a word recognition signal, Col. 4, Lines 64-66)*.

Zavoli and Power are analogous art because they are from a similar field of endeavor in speech-controlled interfaces capable of recognizing segments of a complete utterance. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to combine the ability to detect pauses between words as taught by Power with the method and system utilizing recognition and display of utterance segments for correction as taught by Zavoli to increase speech recognition accuracy by clearly identifying pauses between the spoken digits to recognize individual speech segments of a complete utterance, prevent recognition error in confusing inter-word pauses with an end of speech, and further correct any words within a

sequence that may have been spoken in error or recognized incorrectly *(recognition error, Power, Col. 2, Lines 48-64)*. Therefore, it would have been obvious to combine Power with Zavoli for the benefit of obtaining a more accurate speech recognition system capable of recognizing segments of a complete utterance using inter-word pause detection means, to obtain the invention as specified in Claims 1 and 13.

With respect to **Claims 2 and 14**, Zavoli further discloses:

A speech recognition method and system, wherein said user is only prompted to repeat said subgroup for re-recognition and re-verification if a rejection criteria is met ("no" command used to delete a previous incorrect digit so that a new digit within a sequence may be reentered. A correct sequence is indicated upon the utterance of a "yes" command, Col. 6, Lines 58-63).

Also, it would have been obvious to one of ordinary skill in the art, at the time of invention, to further indicate that a digit has been deleted by prompting a user to enter a new digit, thus making the user aware that the previous digit has been deleted and may be replaced.

With respect to **Claims 3 and 20**, Zavoli further recites:

A speech recognition method and system, further comprising:

Repeating the steps of Claim 1 for remaining input subgroups until it is determined that the complete speech sequence has been recognized *(recognition of digits within a string until a "yes" command is received, indicating sequence completion, Col. .6, Lines 60-65)*.

With respect to **Claims 4 and 21**, Zavoli teaches the system utilizing recognition and display of utterance segments for correction, as applied to Claim 1. Zavoli does not teach the ability to output a feedback utterance to a user through speech synthesis means or a pre-recorded message, however, Power discloses:

A speech recognition method and system, wherein the last step of Claim 1 is affected using pre-recorded prompts or via text-to-speech synthesis, (TTS) to feedback the recognition result *(providing a synthesized prompt and response to a user for verification of a speech input, Col. 9, Lines 57-61)*.

Zavoli and Power are analogous art because they are from a similar field of endeavor in speech-controlled interfaces capable of recognizing segments of a complete utterance. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to combine the speech synthesis means for prompting a user to verify a speech input as taught by Power with the method and system enabling recognition and display of utterance segments for correction as taught by Zavoli in order to synthesize recognized speech segments, thus providing a convenient means of notifying a user of a recognition result if a user is occupied and does not have the means to view a text display such as in a automobile application. Also, it would have been obvious to one of ordinary skill in the art, at the time of invention, to use a pre-recorded message in place of speech synthesis, since a pre-recorded message would be an obvious variation of synthesis as a means of prompting a recognition result to a user. Therefore, it would have been obvious to combine Power with Zavoli for the benefit of obtaining a convenient means of notifying a user of a recognition result, to obtain the invention as specified in Claims 4 and 21.

With respect to **Claims 5 and 18**, Zavoli adds:

A speech recognition method and system, wherein said rejection criteria is embodied as a negative utterance spoken by the user after receiving the fed back recognition result *("no" command used to delete a previously displayed digit, Col. 6, Lines 58-60)*.

With respect to **Claim 6**, Zavoli further discloses:

A speech recognition method, wherein said rejection criteria is embodied as a negative

utterance spoken by the user concurrent with inputting the subgroup that is recognized in the

third step of Claim 1 *("no" command used to delete a previously displayed digit before a digit*

sequence is completely entered and verified with a "yes" command, Col. 6, Lines 58-65).

With respect to **Claims 7 and 22**, Zavoli in view of Power teaches the speech recognition

method and system capable of recognizing individual word segments (digits) through pause

detection means to enable, upon input of a negative utterance, correction of input and recognition

errors, as applied to Claims 2 and 14. Neither Zavoli nor Power specifically suggest prompting a

user to input shorter speech segments upon repeated recognition errors, however, it would have

been obvious to one of ordinary skill in the art, at the time of invention, to prompt the user to

input shorter speech segments because if repeated recognition errors occur, shorter utterances

have less complex speech models and thus, logically, would provide a higher level of recognition

accuracy. Therefore, prompting a user to input easily recognized, shorter speech segments

would provide a well known means of increasing recognition accuracy.

With respect to **Claims 8 and 23**, Zavoli in view of Power teaches the speech recognition

method and system capable of recognizing individual word segments (digits) through pause

detection means to enable, upon input of a negative utterance, correction of input and recognition

errors, as applied to Claims 2 and 14. Neither Zavoli nor Power specifically suggest prompting a

user to input shorter speech segments upon repeated recognition errors as a means of training a

user, however, it would have been obvious to one of ordinary skill in the art, at the time of

invention, that by speaking shorter and more easily recognized speech segments, a user would

gradually learn the proper way to input recognizable utterances. For instance, a user may speak a string of digits too quickly to be recognized correctly. By speaking each speech segment individually, the speaker would be able to attempt a single utterance segment multiple times and gradually come to understand the proper method of producing recognizable speech. Therefore, prompting a user to speak smaller speech segments acts a means of training that user to properly input an utterance.

With respect to **Claims 10 and 25**, Zavoli further discloses:

A speech recognition method and system, wherein said speech units are selected from any of spoken digits, spoken letters and spoken words (spoken digit recognition, Col. 6, Lines 54-57).

Also, it would have been obvious to one of ordinary skill in the art, at the time of invention, to implement the speech recognition method taught by Zavoli in a word and letter recognition application, since all types are related to recognition of a speech segment within an utterance, to increase the usefulness of the recognizer. Furthermore, word and letter recognition are obvious variations of spoken digit recognition within a sequence of digits and thus, would be compatible with the same system, only requiring additional speech model sets.

With respect to **Claims 11 and 26**, Zavoli further suggests:

A speech recognition method and system, wherein input of a next subgroup after receiving the fed back recognition result indicates a correct recognition of the currently input subgroup *("no" command used to delete a previous incorrect digit so that a new digit within a sequence may be reentered. If a digit is correctly recognized the user will input another digit, thus the previous recognition result is considered correct since no negative command was input.*

The user may further verify the result once an entire sequence has been entered with a "yes" command, Col. 6, Lines 58-65).

With respect to **Claims 12 and 27**, Zavoli teaches the method and system utilizing recognition and display of utterance segments for correction initialized through a negative input command, as applied to Claims 2 and 14. Zavoli does not teach the rejection of a speech segment based on a confidence level, however Power discloses:

A speech recognition method, wherein said rejection criteria requires determining a level of confidence in said recognition result *(rejection of a recognized speech input based on confidence level, Col. 9, Lines 54-57).*

Zavoli and Power are analogous art because they are from a similar field of endeavor in speech-controlled interfaces capable of recognizing segments of a complete utterance. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to combine the method of recognition rejection based upon a confidence level as taught by Power with the method and system utilizing recognition and display of utterance segments for correction initialized through a negative input command as taught by Zavoli to provide a means of rejecting an invalid or mispronounced speech input that has a suspect identification, through the use of a confidence level score, to ensure that an entered digit sequence is properly recognized, especially in a application where digit sequence accuracy is critical such as password entry. Therefore, it would have been obvious to combine Power with Zavoli for the benefit of obtaining a means of improving recognition accuracy through the use of confidence level scores, to obtain the invention as specified in Claims 12 and 27.

With respect to **Claim 15**, Zavoli further discloses:

A speech recognition system, wherein the speech recognition unit compares the input subgroup with stored recognition grammar in order to determine the recognition result *(speech recognition module featuring a phonetic dictionary, Col. 5, Lines 24-28)*.

With respect to **Claim 16**, Zavoli additionally suggests:

A speech recognition system, wherein the recognition grammar is stored in a remote memory accessible by the speech recognition module *(invention process implemented on a server accessed over telephone lines, Col. 3, Lines 15-18)*.

Thus, it would have been obvious to one of ordinary skill in the art, at the time of invention, to implement a speech recognition method, utilizing a phonetic dictionary, at a server in order to conserve system memory in a device with limited storage.

With respect to **Claim 17**, Zavoli further recites:

A speech recognition system, wherein the recognition result includes at least one of a subgroup of speech units and a negative utterance representation that is included in the recognition result, and wherein the rejection criteria is met if the negative utterance is included therein *(displaying individual digits to a user, upon recognition, for correction/verification, Col. 6, Lines 54-57, and a rejection result representation displayed to a user, along with previously recognized digits, in the form of a deleted digit, Col. 6, Lines 54-60)*.

Claim 19 contains subject matter similar to Claims 6 and 17, and thus, is rejected for the same reasons.

6.   **Claims 9 and 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Zavoli et al, in view of Power et al, and in further view of Larsen *("Investigating a Mixed-Initiative Dialogue Management Strategy," 1997)*.

With respect to **Claims 9 and 24**, Zavoli in view of Power teaches the speech recognition

system capable of recognizing individual word segments (digits) through pause detection means

to enable further correction of input and recognition errors, as applied to Claim 1. Neither Zavoli

nor Power teaches the ability to enter speech units using a dial pad upon repeated recognition

errors, however Larsen discloses:

A speech recognition method and system, wherein if said rejection criteria are met

repeatedly, the user is prompted to use a dial pad to enter the speech units *(ability to switch to*

DTMF input mode upon repeated recognition errors, Page 66-67, Application).

Zavoli, Power, and Larsen are analogous art because they are from a similar field of

endeavor in speech-controlled interfaces. Thus, it would have been obvious to a person of

ordinary skill in the art, at the time of invention, to combine the ability to enter speech units in a

DTMF input mode upon repeated recognition errors as taught by Larsen with the speech

recognition method and system capable of recognizing individual word segments (digits) through

pause detection means to enable further correction of input and recognition errors as taught by

Zavoli in view of Power to offer an alternative means of inputting information in a speech

interface if a user becomes frustrated with repeated recognition errors. Therefore, it would have

been obvious to combine Larsen with Zavoli in view of Power for the benefit of offering a user

an alternative method of data entry in a speech interface upon repeated recognition errors, to

obtain the invention as specified in Claims 9 and 24.

Conclusion

7.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

8.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to James S. Wozniak whose telephone number is (703) 305-8669

and email is James.Wozniak@uspto.gov. The examiner can normally be reached on Mondays-

Fridays, 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Talivaldis Ivars Smits can be reached at (703) 306-3011. The fax/phone number for

the Technology Center 2600 where this application is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the technology center receptionist whose telephone number is (703) 306-

0377.

James S. Wozniak
5/18/04

SUSAN MCFADDEN
PRIMARY EXAMINER